

Art Unit: ***

CLMPTO

09/29/03

SS

Claims 1-13 are canceled.

14. (New) A resin-encapsulated semiconductor apparatus comprising:

a semiconductor device having a ferroelectric film and a surface-protective film, and

an encapsulant member comprising a resin;

wherein said surface-protective film consists of a heat-cured polyimide prepared by heat-curing a polyimide precursor containing:

a polyimide acid comprising repeating units represented by a chemical formula (I) as given below;

an amine compound having carbon-carbon double bonds;

and

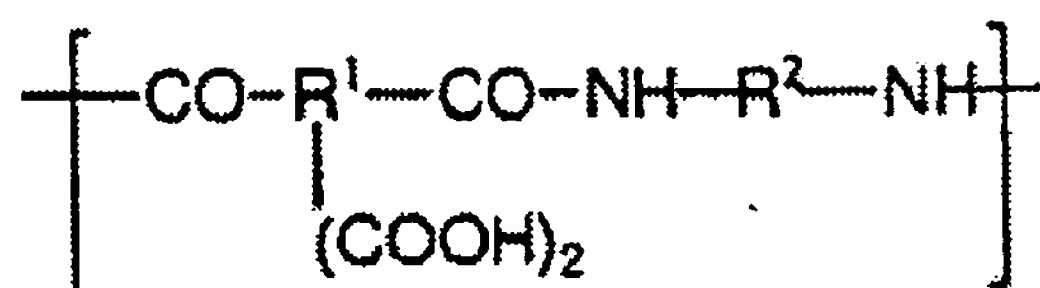
a photopolymerization initiator and/or a sensitizer

wherein

an amount of said amine compound is 1 to 400 parts by weight based on 100 parts by weight of said polyimide precursor and a total amount of said photopolymerization initiator and said sensitizer is 0.1 to 30 parts by weight based on 100 parts by weight of said polyimide precursor;

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Formula (I)

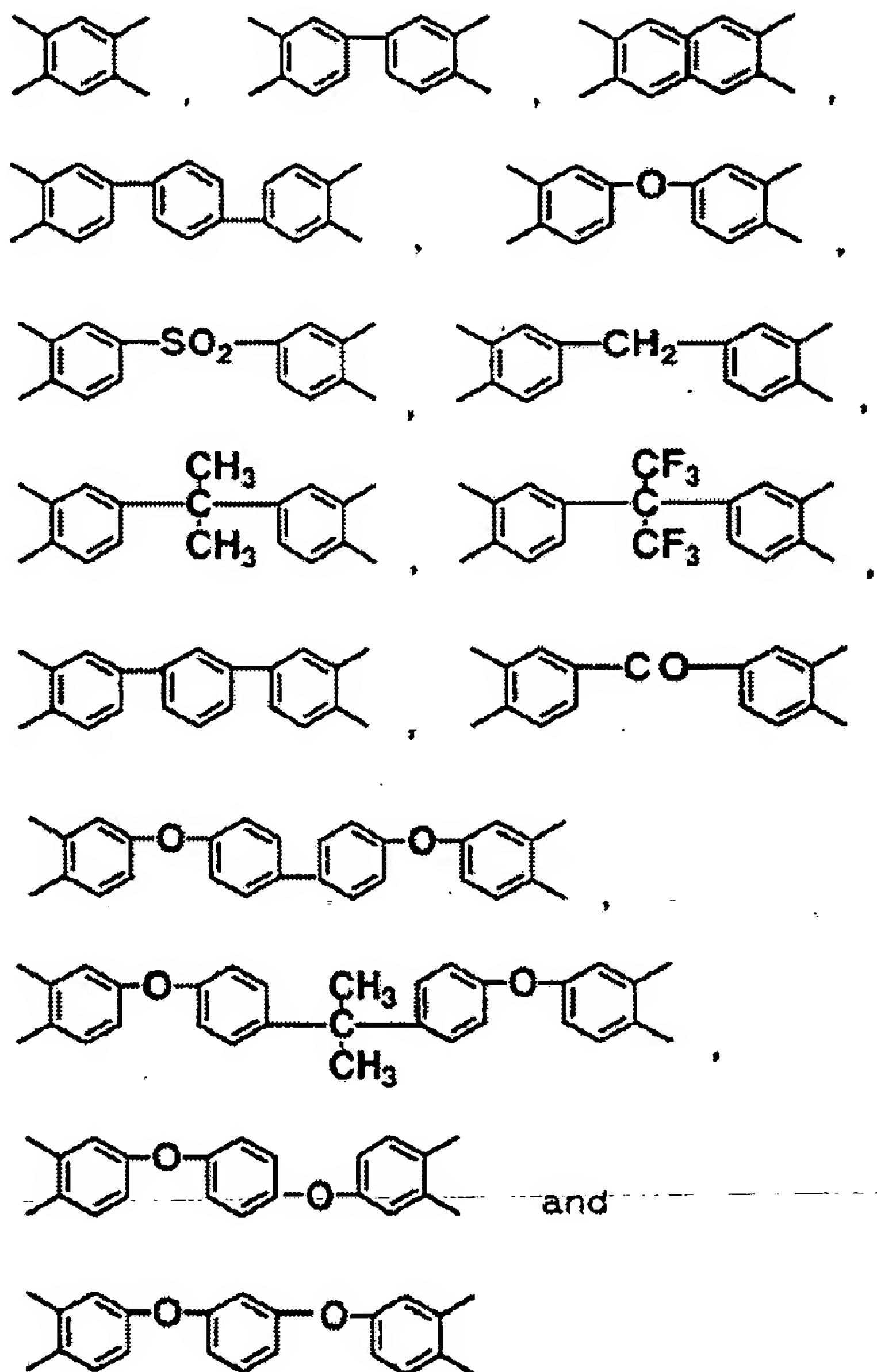


... (I)

wherein R^1 is at least one of tetravalent aromatic organic groups shown in the following chemical formula group (II) shown below, and R^2 is at least one of divalent aromatic organic groups shown in a chemical formula groups (III) and (IV) shown below;

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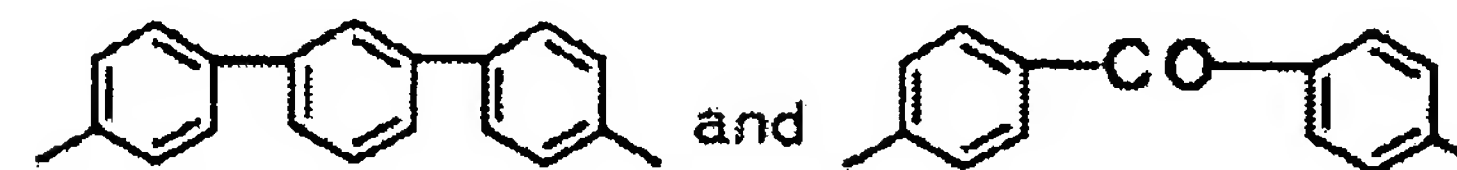
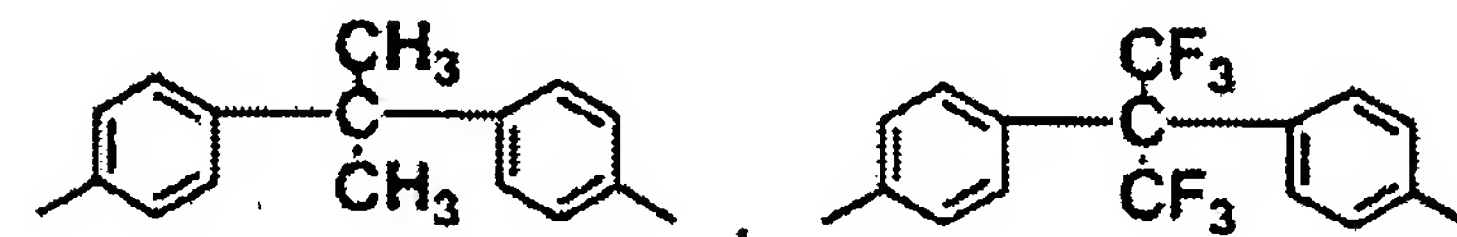
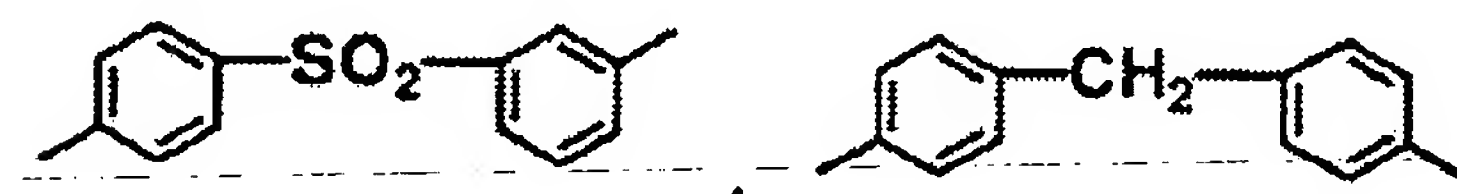
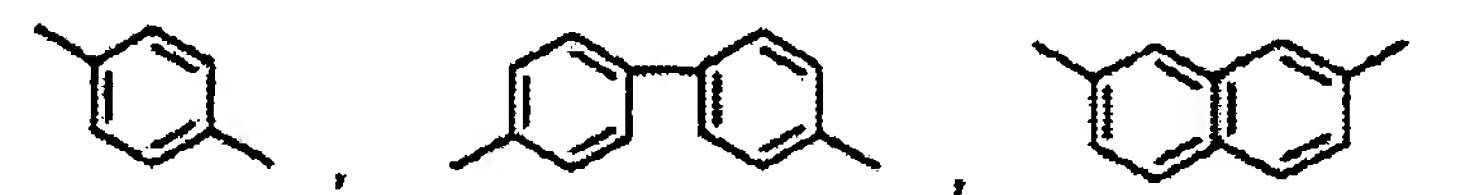
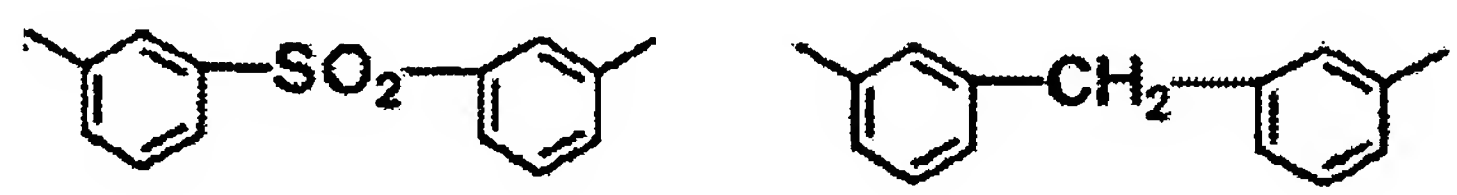
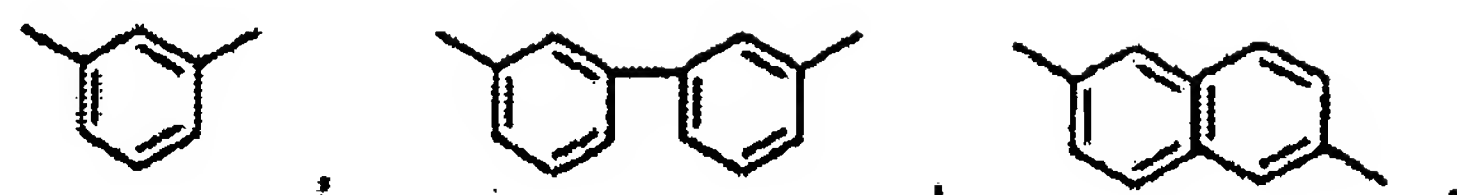
Formula (II)



... (II)

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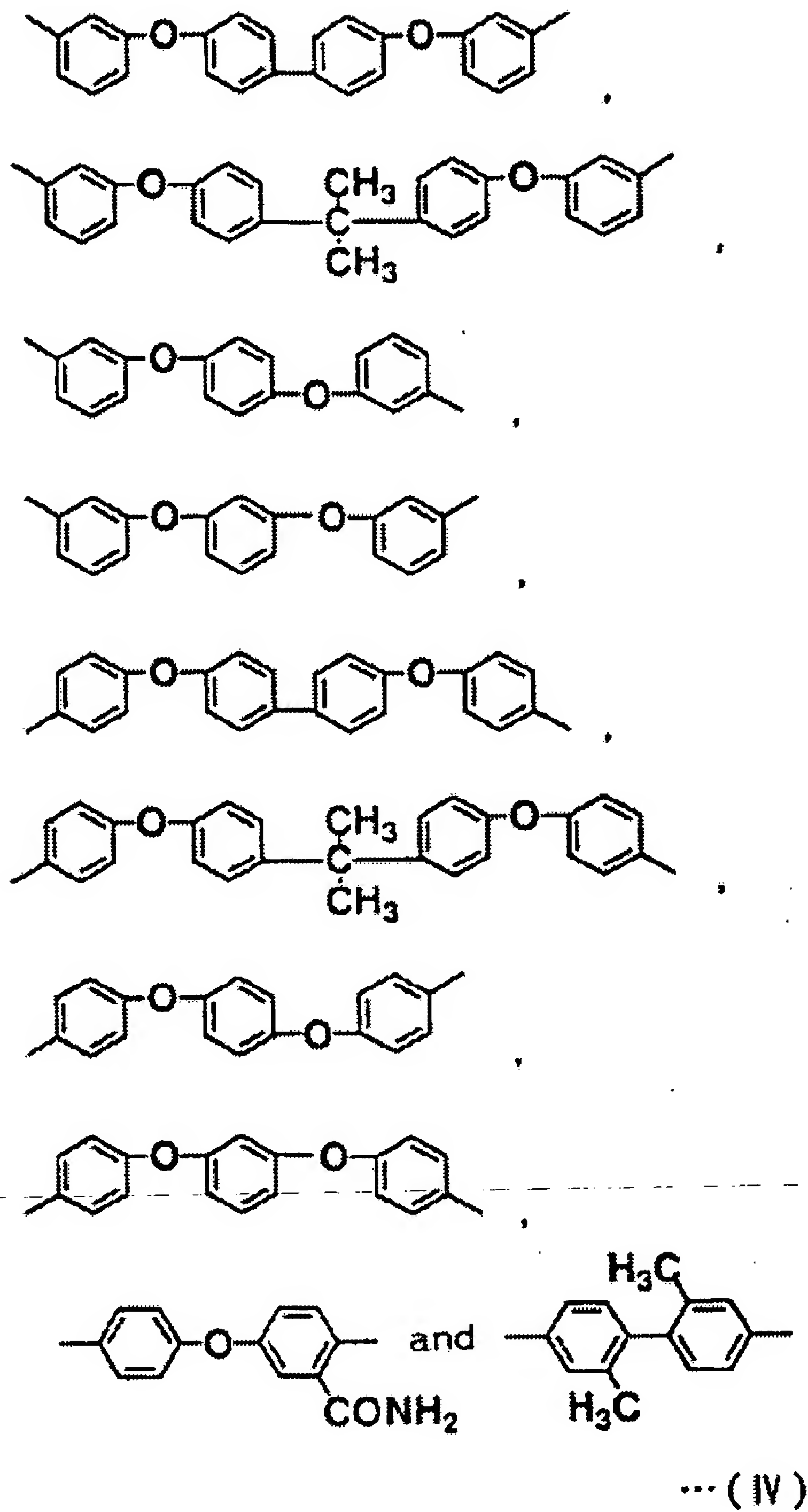
Formula (III)



... (III)

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Formula (IV)



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15. (New) The resin-encapsulated semiconductor apparatus according to claim 14, wherein said heat-cured polyimide has a glass transition temperature of from 240°C to 400°C.

16. (New) The resin-encapsulated semiconductor apparatus according to claim 14, wherein said heat-cured polyimide has a Young's modulus of from 2600 MPa to 6 GPa.

17. (New) The resin-encapsulated semiconductor apparatus according to claim 15, wherein said heat-cured polyimide has a Young's modulus of from 2600 MPa to 6 GPa.

18. (New) A process for manufacturing a resin-encapsulated semiconductor apparatus comprising a semiconductor device having a ferroelectric film and a surface-protective film, and an encapsulant member comprising a resin, comprising steps of:

forming said surface-protective film consisting of a heat-cured polyimide by heat-curing a polyimide precursor containing:

a polyimide acid comprising repeating units represented by a chemical formula (I) as given below;

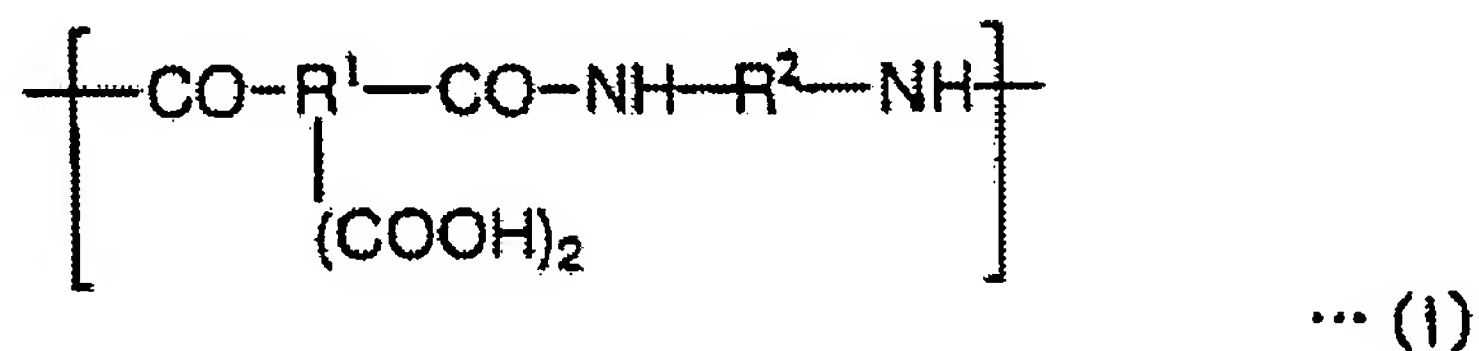
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an amine compound having carbon-carbon double bonds;
and

a photopolymerization initiator and/or a sensitizer
wherein

an amount of said amine compound is 1 to 400 parts by weight based on 100 parts by weight of said polyimide precursor and a total amount of said photopolymerization initiator and said sensitizer is 0.1 to 30 parts by weight based on 100 parts by weight of said polyimide precursor;

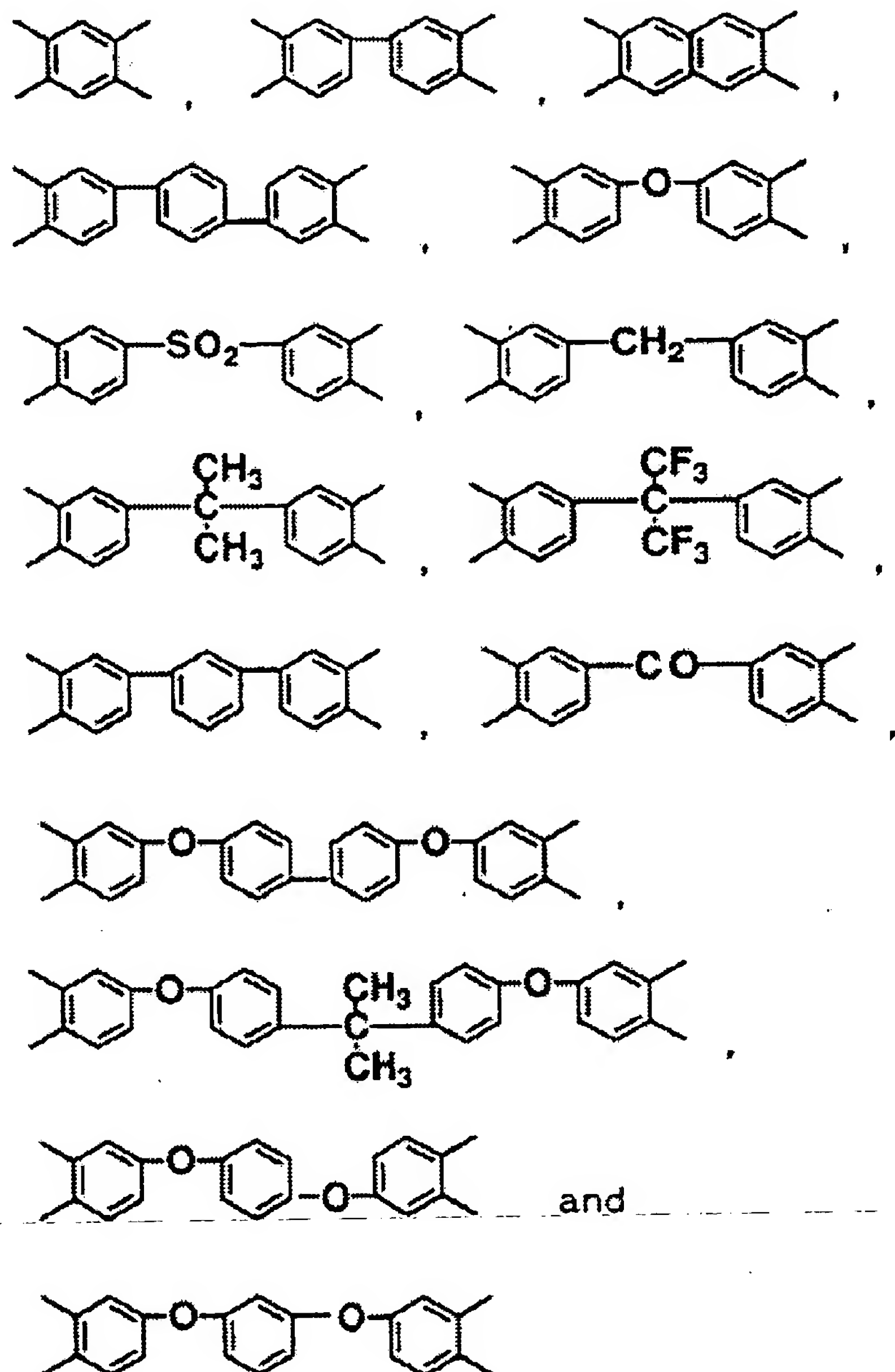
Formula (I)



wherein R^1 is at least one of tetravalent aromatic organic groups shown in the following chemical formula group (II) shown below, and R^2 is at least one of divalent aromatic organic groups shown in a chemical formula groups (III) and (IV) shown below;

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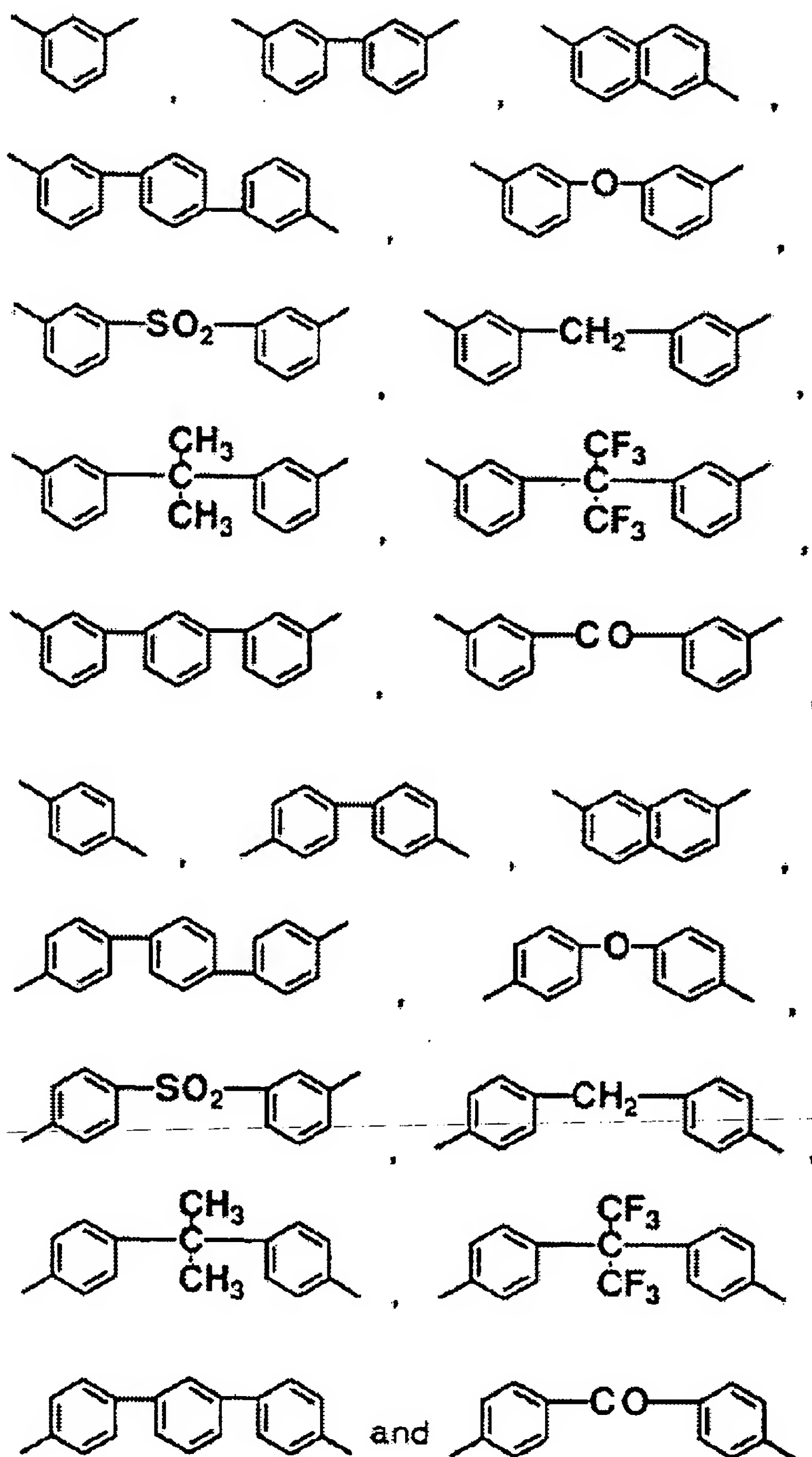
Formula (II)



... (II)

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Formula (III)



... (III)